Patent Claims

1. Finely divided hard moulded body comprising materials having a hardness ≥7 on the Mohs hardness scale which form the moulded body or are present directly on a finely divided substrate as impermeable coating in the form of one or more layers.

2. Finely divided hard moulded body according to Claim 1, characterised in that it is a pigment.

3. Finely divided hard moulded body according to Claim 1 or 2, characterised in that the moulded body or the finely divided substrate is in flake form.

4. Finely divided hard moulded body according to one of Claims 1 to 3, obtainable by wet-chemical application of a precursor to a support, drying, detachment from the support and subsequent calcination with formation of materials having a hardness ≥7 on the Mohs hardness scale or by application of materials having a hardness ≥7 on the Mohs hardness scale to a support by CVD and/or PVD processes and subsequent detachment from the support.

5. Finely divided hard moulded body according to one of Claims 1 to 3, obtainable by wet-chemical precipitation of a primary layer comprising one or more layers on a finely divided substrate and subsequent calcination with formation of an impermeable coating in the form of one or more layers of materials having a hardness ≥7 on the Mohs hardness scale on the substrate or by single or repeated coating of a finely divided substrate with materials having a hardness ≥7 on the Mohs hardness scale by CVD and/or PVD processes.

6. Finely divided hard moulded body according to Claim 1, characterised in that the finely divided substrate comprises natural or synthetic mica, metal flakes, glass flakes, SiO_2 flakes, TiO_2 flakes or iron oxide flakes.

7. Finely divided hard moulded body according to Claim 6, characterised in that the metal flakes consist of aluminium, titanium, bronze, steel or silver.

8. Finely divided hard moulded body according to Claim 1, characterised in that the material having a hardness ≥7 on the Mohs hardness scale comprises aluminium oxide, zirconium oxide and/or mixtures thereof.

9. Finely divided hard moulded body according to one of Claims 1 to 8, characterised in that the thickness of the finely divided moulded body comprising a material having a hardness ≥7 on the Mohs hardness scale is 0.05 to 6 µm or the thickness of the coating applied to a finely divided substrate in the form of one or more layers of materials having a hardness ≥7 on the Mohs hardness scale is 40 to 400 nm.

10. Finely divided hard moulded body according to one of Claims 1 to 9, characterised in that the finely divided moulded body has additionally been coated with one or more transparent, semi-transparent and/or opaque layers comprising metal oxides, metal oxide hydrates, metal suboxides, metals, metal fluorides, metal nitrides, metal oxynitrides or mixtures of these materials.

11. Finely divided hard moulded body according to Claim 10, characterised in that a further layer of materials having a hardness ≥7 on the Mohs hardness scale has additionally been applied.

12. Finely divided hard moulded body according to Claim 11, characterised in that the thickness of the further layer of a material having a hardness ≥7 on the Mohs hardness scale is 20 to 80 nm.

13. Process for the production of finely divided hard moulded bodies according to Claim 1, characterised in that a moulded body is formed from materials having a hardness ≥7 on the Mohs hardness scale or a finely divided substrate is provided with an impermeable coating in the form of one or more layers of materials having a hardness ≥7 on the Mohs hardness scale.

14. Process according to Claim 13, characterised in that a precursor is applied to a support by wet-chemical methods, dried, detached from the support and subsequently calcined with formation of a moulded body from materials having a hardness ≥7 on the Mohs hardness scale, or materials having a hardness ≥7 on the Mohs hardness scale are applied to a support by CVD and/or PVD processes and subsequently detached from the support.

15. Process according to Claim 13, characterised in that a primary layer comprising one or more layers is precipitated onto a finely divided substrate by wet-chemical methods and calcined with formation of an impermeable coating in the form of one or more layers of materials having a hardness ≥7 on the Mohs hardness scale or a substrate is coated one or more times with materials having a hardness ≥7 on the Mohs hardness scale by CVD and/or PVD processes.

16. Process according to one of Claims 13 to 15, characterised in that the material having a hardness ≥7 on the Mohs hardness scale comprises aluminium oxide, zirconium oxide and/or mixtures thereof.

17. Process according to one of Claims 13 to 16, characterised in that the moulded body is additionally coated with one or more transparent, semi-transparent and/or opaque layers comprising metal oxides, metal oxide hydrates, metal suboxides, metals, metal fluorides, metal nitrides, metal oxynitrides or mixtures of these materials.

18. Process according to Claim 17, characterised in that the one or more transparent, semi-transparent and/or opaque layers are applied by wet-chemical, sol-gel, CVD and/or PVD processes.

19. Process according to Claim 17 or 18, characterised in that the applied transparent, semi-transparent and/or opaque layers are calcined.

20. Process according to one of Claims 17 to 19, characterised in that a further layer of materials having a hardness ≥ 7 on the Mohs hardness scale is additionally applied.

21. Use of finely divided hard moulded bodies according to Claim 1 in polymer matrices for increasing the abrasion stability.

22. Use according to Claim 21, characterised in that the polymer matrices are plastics, paints, coatings or inks.

23. Abrasion-stable polymer matrices comprising finely divided hard moulded bodies according to Claim 1.